Chapter 5

Combat Support and Combat Service Support

FIELD ARTILLERY

5-1. The FA system provides close support to maneuver forces, SEAD, counterfire, fire for deep operations, and interdiction, as required. SEAD fires are designed to facilitate the maneuver of air assets. Normally, the DCS is supported by the artillery assets of its parent division and the RAS is supported by the organic artillery of the regiment and/or units from the corps artillery.

5-2. FA delivery systems include cannons, rockets, and missiles. These systems can provide fires under all conditions of weather and in all types of terrain. They can shift and mass fires rapidly without having to displace. The extended ranges of rockets and missiles enable the commander to attack in-depth. A variety of cannon munitions provides increased flexibility in attacking targets. FA units are usually as mobile as the units they support. It is critical to operations that ACTs and ACTMs maintain a current and accurate location on FS assets, routes, and OPs versus gun target lines. FA units also have the following limitations:

- A firing signature that makes the unit vulnerable to detection by enemy target acquisition assets requiring FS assets to frequently conduct survivability moves.

- Limited self-defense capability against ground and air attacks.

- Limited ability to destroy armored, moving targets.

5-3. The link to effective artillery support for the troop and squadron is the FSO. The digital FM connection between the KW, the FIST, and the supporting artillery is critical.

MORTARS

5-4. Mortars are organic to heavy DCSs, regimental squadrons but not organic to light DCSs. Mortars are indirect fire weapons organic to the maneuver troops. Mortars provide a responsive and accurate indirect fire capability. They are ideal weapons for attacking targets on reverse slopes, in narrow ravines, and in other areas difficult to strike with low-angle fires. Mortars are also ideal weapons against dismounted troops in the open. They are most effective in suppression, smoke or obscuration, and illumination missions. Suppression missions force the enemy to button up or move to less advantageous positions. Obscuration missions can place smoke directly on the enemy to obscure its vision or between the enemy and friendly forces to conceal movement. During illumination missions, special rounds are used to illuminate the enemy. This illumination allows a daytime engagement

capability during periods of limited visibility. Mortar support for the ACT will often be required on short notice or in an immediate reaction situation. This support needs to be coordinated directly with the appropriate GCT.

PLANNING

5-5.   Mortar fires are planned in the same manner as FA. They are planned on all known or suspected enemy locations. These locations include areas in front of the objective, on the objective, and beyond the objective. Targets are also planned along the most likely enemy avenues of approach. If time allows, planning is detailed, closely coordinated, and disseminated.

COORDINATION

5-6.   The RAS commander or S3 and the regimental FSO normally accomplish coordination. The situation may dictate that the RAS coordinate directly with the nearest GCT that can provide the mortar support. FS coordination measures and a communications net are established during the coordination process. A quick-fire net is also established to allow the troops to directly request and adjust immediate FS.

EMPLOYMENT

5-7.   Mortars are best employed to support a squadron operation with immediate suppression or immediate smoke or both. These employment roles will most likely occur during reconnaissance and screening operations. Factors to consider during employment are the locations of the mortars and the locations of squadron assets conducting these operations. Range limitations may frequently preclude the use of mortars for the needed FS. However, mortars should always be considered if available and within range.

NAVAL GUN FIRE SUPPORT

5-8.   NGFS can provide large volumes of immediately available, responsive FS to land combat forces operating near coastal waters. NGFS provides close supporting, deep supporting, preparation, counterfire, reconnaissance, SEAD, defensive, protective, obscuration screening, and countermechanized fires. Naval surface ships may be assigned one of two FS missions, DS, or GS. Ships assigned the mission of DS provide fires for a committed maneuver battalion. Ships assigned the mission of GS provide fires for a committed maneuver brigade or larger unit. Naval gunfire liaison sections, which are organic to Marine artillery battalion and regimental headquarters and ANGLICO sections, which may be attached to Army and allied headquarters from the maneuver company and/or troop to division level, advise and assist ground commanders with the coordination of NGFS.

SUPPRESSION OF ENEMY AIR DEFENSES

INTRODUCTION

5-9. SEAD is an essential part of all operations employing Army aviation or other Service specific assets. It is the activity that neutralizes, destroys, or

to enable TACAIR operations to be successfully conducted. It increases the probability of success and reduces the loss of friendly air power. Before a

the SEAD effort required to accomplish the mission. In some cases, SEAD may take priority over squadron close support artillery missions.

Suppressive Fires

5-10. SEAD requires an integrated air and land force effort to locate and suppress enemy surface -ADs. The location and detection effort is continuous and is emphasized during actual attacks on a critical portion of

close to the FLOT, suppression is achieved primarily by fires from division direct and indirect fire systems. Threat combat formations are characterized

systems are not located near the FLOT, but they are able to cover this area. HIMAD systems are a threat to friendly aircraft that must climb to higher

Planned fires

Specific FS units are designated to engage preplanned AD targets.
-priority basis for a limited time. Suppressive
fires are routinely planned against known and suspected SA   -8, and SA
according to a time schedule), or they may be on call. Planned enemy AD targets may be engaged as part of preparations or counterpreparations,

a coordinated air-to
schedules artillery fires. The FSO considers the type of mission to be flown, the tactics to be used by the aircrew, and the locations of enemy AD systems.

of friendly weapons.

5-12.
known, some suppression assets should be immediately available to pilots or observers. Units to support this effort are designated before the operation

immediate SEAD fires when aircraft are used in the area.

5-13.
opportunity. Because of the mobility and small size of most AD targets, aircrews use observed fire techniques and engage targets immediately upon

detection. Fire is adjusted on these targets by forward observers, attack or scout helicopter pilots, and USAF pilots either directly or through the TAC(A). Commanders may order the forward observer to locate and bring under attack enemy AD systems in the vicinity of the target just before the arrival of friendly aircraft.

FIRE SUPPORT

5-14. The potential of FS as a combat multiplier can be realized only through meticulous planning and thorough coordination at all levels. This is especially true of SEAD operations in which the squadron FSE must continually plan to use any and all available assets in a FS role (except mortars due to limited range and/or effect). With coordinated SEAD operations, the commander can protect his assets and fully exploit the capabilities of the air cavalry assets.

CLOSE AIR SUPPORT SUPPRESSION OF ENEMY AIR DEFENSES

5-15. Tactical fixed-wing and rotary-wing aircraft may be threatened by highly active and accurate threat ADs. AD suppression sorties and EW missions are conducted to enhance the survivability of tactical aircraft. The squadron must give high priority to SEAD when being supported by tactical aircraft. SEAD is initiated when the squadron calls for FA suppressive fires.

5-16. Effective SEAD will depend on the timely and accurate intelligence of positions and types of enemy weapons. Priority targets for SEAD should be enemy AD systems or sites in the immediate target area. The squadron commander's area of responsibility extends from his FLOT to the limits of observed fire. During the actual air strike, an artillery check-fire need not be imposed. Instead, the ALO, TAC(A), or individual controlling the strike can ascertain the intended attack track of the aircraft. He can then impose an airspace coordination area or shift fires to suspected or actual enemy AD sites. The weapons control status for AD systems should be changed to <u>at least weapons tight</u> during the air strike to reduce the probability of attack by friendly AD fire. Direct fire of organic weapons on the enemy generally will not affect the attack of the target by friendly aircraft.

ELECTRONIC WARFARE SUPPRESSION OF ENEMY AIR DEFENSES

Contributions

5-17. EW SEAD contributes significantly to the battlefield by reducing the enemy's ability to destroy friendly air resources. Typically, AD is a structured activity that is rigidly controlled and assigned target priorities through redundant communication links from AD commanders located in remote C^2 posts. Suppression is accomplished by destructive means, disruptive means, or a combination of the two.

5-18. **Destructive Suppression.** Destructive suppression is used to destroy surface-to-ADs or personnel. Its affects are cumulative and friendly aircraft attrition is steadily reduced. But large demands are placed on combat power when destructive means are employed alone. Therefore, destructive means must be integrated and used with disruptive means, such as jammers, which generally are reusable resources.

Disruptive Suppression.
degrade, deceive, delay, or neutralize surface-to-air defenses or personnel. There are two types of disruptive suppression—active and passive. Active

and avoidance or evasive flight maneuvers and/or profiles. Passive suppression includes camouflage, IR shielding, warning receivers, and

5-20.
Disruptive means complement destructive ones, and are best used to—
-
- Assist destructive ground-based and airborne suppression systems in
- Temporarily degrade or neutralize enemy AD systems when
- Sustain suppression effects achieved by destruction, once the threats

5-21. During EW SEAD operations, Army and Air Force suppression systems

system, the complexity of the suppression requirement, and the mission

unity of effort. The following is a list of suppression capabilities:

and observed and unobserved fires, jammers, unmanned aerial

- The Air Force has visual and sensor target acquisition, attack fighters,

FIRE SUPPORT COORDINATING MEASURES

reduce requirements for coordination or to restrict firing into certain areas.

Permissive measures are those that reduce requirements for coordination

measure is used, the graphic display contains the title (abbreviation) of the
-time group.

additional information.

RESTRICTIVE MEASURES

Restrictive Fire Area

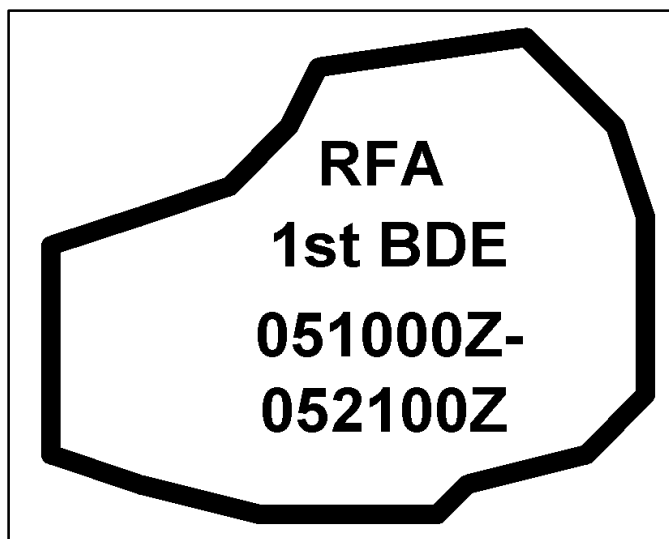fires that exceed those restrictions will not be delivered without coordination

Figure 5-1. Restrictive Fire Area

No-fire Area

5-24. The NFA (Figure 5-2) is an area into which no fires or their effects are allowed. The two exceptions to the NFA are when the establishing headquarters allows fires on a mission by mission basis; or when a friendly force is engaged by an enemy located within the NFA, and the commander returns fire to defend his force.

Figure 5-2. No-Fire Area

No-fire Line

5-25. The NFL (Figure 5-3) is a line short of which artillery or ships do not fire except on request or approval of the supported commander, but beyond which they may fire at any time without danger to friendly troops.
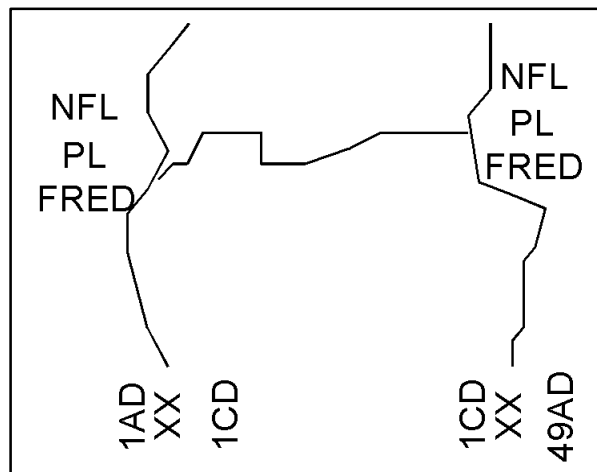

Figure 5-3. No-Fire Line.

Restrictive Fire Line

5-26. The RFL (Figure 5-4) is a line between converging friendly forces that prohibits fires, or the effects of fires, across the line without coordination with the affected force.
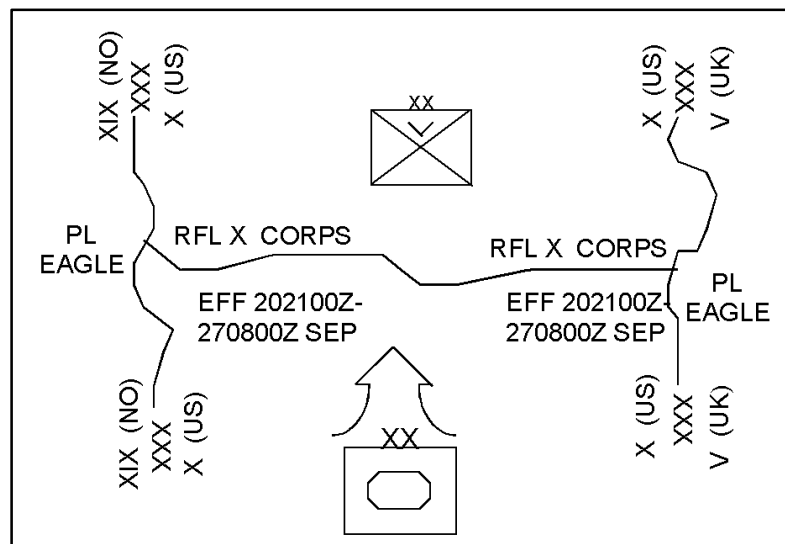

Figure 5-4. Restrictive Fire Line

Airspace Coordination Area

5-27. Informal ACA (Figure 5-5) is normally used for immediate air strikes, and can be established at battalion or HHQ. Informal ACA can be established by using lateral, altitude, or timed separation. They are usually in effect for a very short period of time.

5-28. Formal ACA (Figure 5-5) is a three-dimensional block of airspace that provides lateral and altitude separation between aircraft and other FS assets, and is established by brigade or HHQ.
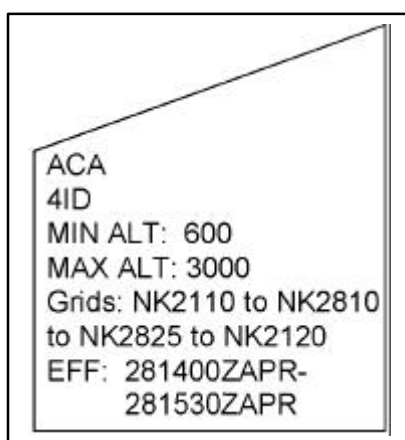

Figure 5-5. Airspace Coordination Area

PERMISSIVE MEASURES

Coordinated Fire Line

5-29. The CFL (Figure 5-6) is a line beyond which conventional (both direct or indirect systems) may fire at any time within the boundaries of the establishing headquarters without additional coordination.
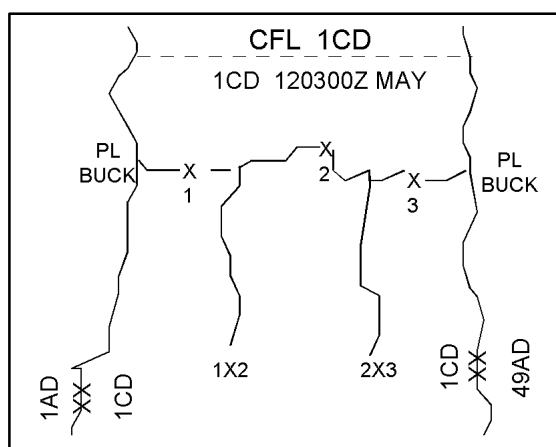

Figure 5-6. Coordinated Fire Line

Fire Support Coordination Line

5-30. The FSCL (Figure 5-7) is a line established and adjusted by the appropriate land or amphibious force commander (in the Army usually the corps commander; in amphibious operations usually the CLF after coordination with the CATF) within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Forces attacking targets beyond an FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide, both in the air and on the ground. Supporting elements may attack targets beyond the FSCL, providing the attack will not produce adverse effects on, or to the rear of, the line that may affect current tactical operations.
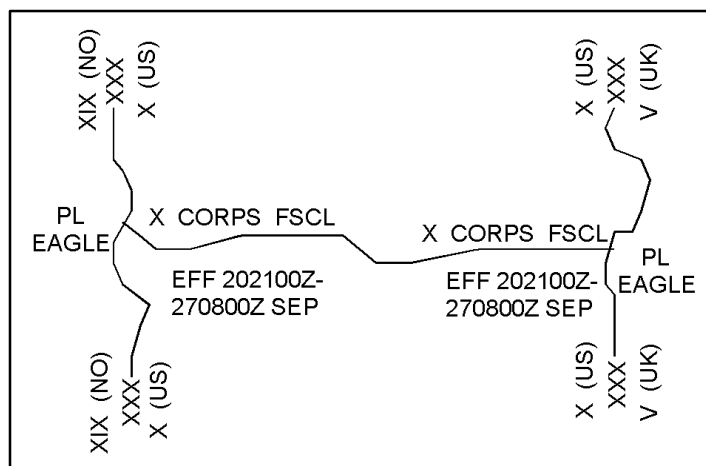

Figure 5-7. Fire Support Coordination Line

Free-fire Area

5-31. An FFA (Figure 5-8) is a specific, designated area into which any weapon system may fire without additional coordination with the establishing headquarters.
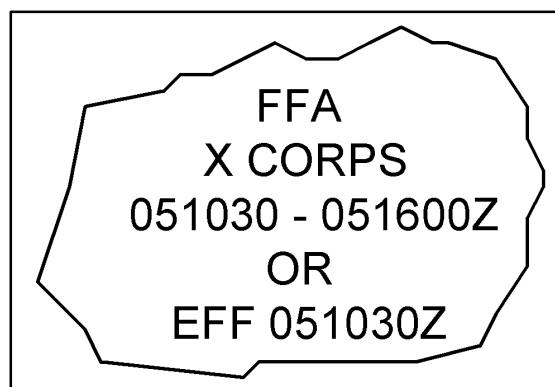

Figure 5-8. Free Fire Area

CLOSE AIR SUPPORT

5-32. CAS missions are air strikes against hostile targets that are close to friendly forces. These missions require detailed integration with the fire and maneuver of supported forces to increase effectiveness and avoid fratricide. The USAF plans, directs, and controls CAS missions through the TACAIR control system. CAS missions are executed based on preplanned or immediate requests. Requests should be preplanned if at all possible so that the delivery system and ordnance can be matched with the target. The firepower of both surface-based weapons and CAS aircraft should be integrated effectively to achieve the desired concentration of fire on targets.

PREPLANNED REQUESTS

5-33. Preplanned requests are those for which a requirement can be foreseen. They permit detailed planning, integration, and coordination with the ground tactical plan. Munitions can be tailored precisely to the target, and complete mission planning can be accomplished.

5-34. Requests from the troop level are forwarded to the squadron TOC over the command net or by other means. When a request is received at the TOC; the S3, FSO, and ALO review it to determine the suitability of the target and to consider potential airspace conflicts. The S3 may recommend that the target be attacked with another system. As a minimum, he will integrate the request with the squadron FS plan. The S3 adds the request to the file of preplanned requests, eliminates duplications, consolidates remaining requests, and assigns priorities. He then forwards the consolidated request to the aviation S3 air or corps G3 air over the O&I net or RATT communications. The evaluation and integration process is repeated at the corps TOC. From there, the targets are assigned to the USAF.

IMMEDIATE REQUESTS

5-35. Immediate requests are from supported ground commanders to fulfill urgent, unforeseen requirements. Details of the mission are generally coordinated while aircraft are held on airstrip alert or are airborne.

5-36. Immediate requests originating at troop level are forwarded to the RAS TOC over the command net or by other means. The squadron S3 evaluates each request and then passes it to the regiment, division, or corps for execution. The regimental or aviation brigade TACP transmits the request directly to the ASOC at the division or corps TOC over the USAF air request net. The TACP at each intermediate Army echelon monitors the transmission. Each intermediate TACP coordinates the request with the S3 or G3 and the FSCOORD at their level to determine approval or disapproval of the request. Silence by an intermediate TACP indicates approval by the associated Army echelon unless a disapproval is transmitted within a specified time stated in the unit SOP. (Normally, the time is 10 minutes.) If any echelon above the initiating level disapproves the request, the TACP at that echelon notifies the ASOC and the initiating TACP, giving the reason for the disapproval. The ASOC passes a copy of the request to the corps G3 air, who is collocated in the TACAIR support element, for coordination with the FSCOORD. When the request is approved, the ASOC orders the mission

flown. Response to immediate requests may involve launching general alert aircraft, using ground or air alert sorties, or diverting airborne aircraft from other missions.

GROUND AND AIR ALERTS

5-37. Either a ground or an air alert may be requested, using planned or immediate communication channels. Planning for either of these options can improve the responsiveness of TACAIR to the needs of the ground commander. CAS assets on air alert close behind the FEBA may be able to respond to a preplanned request within 5 minutes. Conversely, even in response to an immediate request, diverted aircraft or aircraft on ground alert may require 30 to 60 minutes for launch and transit. The specific tactical situation, including the type of CAS aircraft available, will dictate the best option. Commanders must be aware that immediate CAS requests will not necessarily provide the timeliest response.

CLOSE AIR SUPPORT TARGET ACQUISITION AND TARGETING

TARGET ACQUISITION

5-38. TAC(A) and fighter pilots can acquire targets as well as control or attack Army-acquired targets. Squadron S3 personnel must work closely with the ALO to ensure that acquired targets not suitable for air attack are attacked by other means if appropriate.

TARGETING

5-39. To be effective, CAS must be employed against targets that present the most immediate threat to the supported force. Almost any threat encountered inside the FSCL and near the FLOT may be suitable for CAS targeting, but the indiscriminate use of CAS may needlessly increase the attrition of attack aircraft and increase the chances of fratricide. No single category of targets is most suitable for CAS application. Mobile massed armor formations, however, present the most immediate threat to friendly ground forces and thus are prime candidates for air attack.

CLOSE AIR SUPPORT CAPABILITIES AND LIMITATIONS

CAPABILITIES

5-40. CAS capabilities include high-speed and long-range support, versatile weapon and ammunition mixes, and accurate delivery. AV-8, A/OA-10, F-14, F-16, and F/A-18 pilots have an excellent air-to-ground communications capability and can strike moving targets. In addition, night CAS is available using AC-130 gunships that can provide accurate support for extended periods of time to ground units and static positions. Key employment guidelines and capabilities are provided in Joint Publication 3-09.3.

LIMITATIONS

5-41. CAS aircraft are limited by resource scarcity and delivery restrictions caused by limited visibility, adverse weather, and/or the proximity of friendly forces. CAS flight restrictions caused by enemy ADs may impose delayed response and short loiter times or may limit reattack capabilities.

CLOSE AIR SUPPORT COORDINATION AND CONTROL

5-42. A TACP advises the ground commander and his staff on the integration of CAS with ground operations. The TACP also coordinates and directs close air strikes. It includes an ALO and a TAC(A). The squadron should be supported by either an ALO or a TAC(A).

5-43. A TACAIR strike is normally controlled by a TAC(A), but it may be controlled by a qualified TACAIR C^2 specialist or similar military service skill. In an emergency, an air strike may be controlled by a qualified Army person designated by the supported ground commander. When this occurs, the ground commander must assume responsibility for the safety of the troops. When ordnance is a factor to the safety of friendly troops, the aircraft's axis of attack should be parallel to the friendly forces. The person controlling the air strike locates and describes the target and identifies friendly positions. The commander then relays this information to the pilots using any means available. Although most fighter aircraft have FM capability, the ground commander may have to relay this information through an Army aircraft that has both FM and UHF capabilities.

ENGINEER SUPPORT

PLANNING CONSIDERATIONS

5-44. Combat engineer assets are not organic to ACSs. Engineer support is provided by the regimental engineer company to the RAS and by the division's engineer brigade to the DCS. The RAS may receive engineer support for a specified mission or time. The RAS usually receives this support during route reconnaissance, covering force operations, or guard operations. The engineer platoon leader serves as the RAS engineer and advises the commander on the use of engineers and their equipment. For division cavalry, they will also usually receive an engineer platoon to support similar type missions. When planning engineer support, the commander should consider that the engineers will accompany the lead elements and be employed as far forward as possible.

FUNCTIONS

5-45. When required, engineer units provide the squadron with countermobility, survivability, and sustainment engineer support and need to be incorporated into the perimeter defense plan. Engineer units can also perform infantry combat missions, if necessary. Air cavalry's air mobility negates the need for much ground mobility engineer support.

Countermobility Engineer Support

5-46. Countermobility engineer support enhances and complements the effectiveness of the ACTMs. Part of the countermobility task is to disrupt enemy attackers or turn them into selected areas such as EAs. These operations canalize the enemy into EAs, degrade its ground mobility, and increase its time in the killing zone. They also ensure that maximum combat power is massed on enemy concentrations. The AHT of the RAS has the capability to support these operations through the emplacement of aerial delivered minefields, i.e., Volcano installed on UH-60s (see FM 1-113).

Survivability Engineer Support

5-47. Engineer survivability operations protect semifixed positions of air cavalry from enemy observation and direct and indirect fires. The engineers provide this protection for CPs, FARPS, and maintenance facilities. They can also build revetments for helicopters.

Infantry Combat Mission

5-48. When engineers perform infantry combat missions, their ability to accomplish specialized missions is significantly degraded. The infantry mission is one of last resort. Air cavalry must provide its own perimeter defense; perimeter defense is not an engineer function. FM 5-100 contains detailed information about engineer combat operations.

AIR DEFENSE PLANNING AND EMPLOYMENT

5-49. The squadron commander establishes priorities for AD within the squadron's area of responsibility. If the squadron is augmented with attached AD assets, the senior AD officer or NCO will be the squadron AD officer or NCO. The commander will analyze his AO, the terrain, and the probable numbers and types of enemy aircraft to be expected. He will designate likely fixed and rotary wing air avenues of approach leading into his AO. The commander must balance his analysis of the threat against the available AD weapons supporting his unit. After the commander establishes the priorities, the AD officer and the S3 determine the specifics of AD weapon allocation and what positions will be occupied. The S3 continues to coordinate and supervise the activities of the supporting AD force throughout the operation.

AIR DEFENSE ACTIVE AND PASSIVE MEASURES

5-50. Air cavalry units must be protected from threat air assets. The threat will control some of the airspace above the battlefield some of the time. Air cavalry will attempt to engage and destroy threat aircraft with their air-to-air systems, vehicular-mounted weapons, and small arms and supporting AD systems. This direct engagement and destruction of threat aircraft is known as active AD. At the same time, air cavalry must take measures to avoid observation by threat pilots. The measures taken to avoid detection are known as passive AD.

ACTIVE AIR DEFENSE

5-51. Air cavalry units have a limited AD capability. The small arms of the squadron or troop can destroy an attacking aircraft or disrupt its attack. FM 44-8 explains the use of small arms in the AD role.

PASSIVE AIR DEFENSE

5-52. Target detection from the air is difficult. Threat pilots may or may not be required to see and identify a target to attack it. However, the effectiveness of high-performance aircraft is greatly reduced when units take advantage of terrain for cover and concealment.

5-53. When a unit is stopped, it should—
- Occupy positions that offer cover and concealment.
- Wipe out vehicle track marks around stationary positions just after movement.
- Avoid silhouetting vehicles against the skyline or against an area of a different color.
- Rotate air guards frequently because scanning for long periods dulls visual perception skills.
- Disperse vehicles. Dispersion not only makes detection difficult, it ensures that a single aircraft on a single pass can attack only one vehicle.
- Post air guards in dismounted positions to provide warning of approaching aircraft. Air warning signals, visual and audible, must be specified in the unit SOP.
- Place camouflaged coverings on the windshields and headlights of ground vehicles and on the canopies of aircraft. Exposed vehicles should be thoroughly camouflaged.
- Open hoods of the vehicles to break up silhouettes and allow for more rapid cooling of the engines to counter enemy IR devices.
- Establish a "scatter plan" from the AA if attacked by enemy air or artillery.

5-54. When a unit is moving, it should—
- Maintain communications security.
- Use covered and concealed routes when available.
- Rotate air guards frequently because scanning for long periods dulls visual perception skills.
- Post air guards on vehicles to provide warning of approaching aircraft.
- Specify air warning signals, visual and audible, in the unit SOP.
- Turn vehicles 90 degrees to the direction of attack, if attacked. Aircraft normally attack parallel to the movement of the convoy and this countermeasure will quickly get vehicles out of the line of fire.
- Add aircraft for convoy security to provide additional protection from enemy air attacks.

INTELLIGENCE

5-55. Intelligence enables the commander to see the battlefield. The commander's ability to visualize the battlefield directly influences the effectiveness of maneuver and FS and the protection of the force. Properly analyzed intelligence will aid in graphically depicting the enemy, weather, and terrain to support the timely and effective employment of CS assets.

5-56. The squadron S2 is the expert on the enemy, weather, and terrain. Accurate intelligence, sound assessments, and target development can reduce many uncertainties about the battlefield. The IPB process is the principal tool the S2 uses to analyze the enemy, weather, and terrain. FM 34-130 contains detailed information on the IPB process. DS engineer topographic teams, directed by the corps G2, provide the terrain products. The weather team, attached to the regiment, provides the weather products. The squadron can overcome terrain obstacles, but the weather can adversely affect squadron operations. Therefore, direct weather support is required at the regiment and division. The regiment or division relays weather information to the squadron. The weather team can reduce many of the uncertainties in planning combat operations. This team is more critical to aviation maneuver forces than any other force on the battlefield. The forward area limited observation program, pilot reports, and forward observers are other sources of observed weather information.

5-57. The S2 section of the squadron provides graphic displays of doctrinal, situational, event, and decision support templates. The decision support template is important because it translates intelligence estimates and the OPLAN into graphic form. While the S2 may be responsible for coordinating the development of the decision support template, the S3 has overall responsibility for the template. This template is a total staff effort to assist the commander in synchronizing assets and making timely decisions through the war-gaming of friendly and enemy COAs. The commander can use the template to confirm or deny enemy COAs, exploit assailable enemy flanks and select high-value targets for engagement. He can also interdict critical points that will force the enemy to abandon a COA. Further explanation of the decision support template is in FM 34-130.

5-58. Collection management by the S2 is based on intelligence requirements not answered by the IPB process. R&S planning must be thorough. The plan must be continuously updated as the situation changes. The great distances traveled by squadron aircraft require the S2 to continuously interface with the regimental S2 and the support element in the corps TOC. The S2 can then better predict enemy actions in selected areas of interest. Periodic R&S adjustment of high-value targets will ultimately give the commander a time-phased picture of the battlefield. It will also give him viable options for using critical assets in a timely manner.

5-59. GSR, remote sensors, UAV, or other MI assets may be placed OPCON or attached to the squadron to enhance reconnaissance and security capabilities. The S2 incorporates these assets into the R&S plan and recommends employment methods to the commander.

ELECTRONIC WARFARE

5-60. EW employs electromagnetic energy to determine, exploit, reduce, or prevent hostile use of the electromagnetic spectrum while retaining its use for friendly forces. Both friendly and enemy forces depend on electronic devices and are vulnerable to actions that adversely affect their use of these devices. EW techniques also locate critical enemy units and CPs by identifying communication and noncommunication emitters. Successful integration of electronic deception or jamming can enable the commander to degrade, influence, or possibly destroy the enemy's C^2 systems at critical times and places.

5-61. The squadron may receive EH-60 (Quick Fix) assets on a mission basis to perform the direction finding or jamming task. The EH-60 is effective against communication devices but not against radar systems. When CEWI platoon assets are employed, mission profiles vary from far forward at low altitudes to standoff locations at high altitudes. The exact altitude and standoff ranges will vary, depending on the mission and the AD threat. The CEWI platoon is frequently employed in a direction finding or an electronic countermeasure role. An air assault operation across the FLOT is an ideal opportunity to integrate CEWI assets with RAS elements. Screening operations may require the use of EW aircraft along with reconnaissance forces. The three functional areas of EW are EW support measures, electronic countermeasures, and electronic counter-countermeasures.

ELECTRONIC WARFARE SUPPORT

5-62. These support measures involve the interception, location, and identification of enemy forces. The CEWI platoon provides combat information for the S2 to meet the commander's requirements for FS, maneuver, and force security. EWS are the primary sources for electronic attack actions by the S3. The S2 must establish priorities for electronic attack plans, orders, and requests. He continuously coordinates the operations of regiment or division MI resources through the regiment or division tactical operations center support element and the battlefield information control center.

ELECTRONIC ATTACK

5-63. These countermeasures involve actions taken to prevent or reduce the effective use of the electromagnetic spectrum by hostile forces. The squadron S3 plans and coordinates EW operations. He primarily directs electronic attack actions in jamming and deception roles. With the limited resources available, the S3 must extensively plan those necessary electronic attack targets. Along with the S2 and FSO, the S3 establishes target priorities. Electronic attack actions are taken against targets that will degrade the enemy's ability to respond effectively. Electronic attack tasking and requests are similar to those discussed in paragraph 5-62.

ELECTRONIC PROTECTION

5-64. These actions are taken to retain effective friendly use of the electromagnetic spectrum. The S3 coordinates with the C-E officer in establishing the EP to protect friendly C-E operations. Training in the

proper employment of the emitters and the emitter design is necessary for effective EP. FM 34-1 provides details about IEW.

COUNTERINTELLIGENCE

5-65. Counterintelligence supports those actions necessary to protect the force; for example, the OPSEC needs of the command. Counterintelligence will support actions that counter the hostile intelligence threat; safeguard the command from surprise; deceive enemy commanders; and counter enemy sabotage, subversive, and terrorist activities. FM 34-60 contains more information on counterintelligence.

AIR TRAFFIC SERVICES

FUNCTIONS

5-66. The corps aviation brigade structure includes ATS battalion that provides the personnel and equipment to establish, operate, and maintain ATC facilities. ATS elements interface with aircraft in flight and with A^2C^2 elements at CPs to provide ATS to aircrews that are conducting tactical operations. ATS support includes navigational assistance, flight-following assistance, air threat warnings, weather information, artillery advisories, and airfield and landing site terminal control. ATS units also interface with host nation airspace cells and sister services during joint and combined operations.

SYSTEM

5-67. ATS personnel operate a network of equipment located at FOCs, FCCs, approach and departure control facilities, and airfield control towers. They also operate NAVAIDs to provide for the control and coordination of air traffic within the corps area. FM 100-103 explains the specific operation of these facilities.

REAR OPERATIONS

5-68. ATS units provide continuous ATC service in the rear operations area. They also provide emergency and routine weather and air-warning information to aircraft in flight. An FOC or one or more FCCs will be established to extend the communications coverage between the rear operations area and the aircraft handed over to other FCCs that provide support to the tactical operations area.

TACTICAL OPERATIONS

5-69. Restrictions and constraints will be kept to an absolute minimum. Freedom of movement by Army aircraft is necessary, based on mission requirements, throughout this area. The required flexibility and potential density of traffic make individual reporting neither feasible nor desirable. However, an FCC will be established and operated by ATS elements to coordinate information reflecting weapon intensity and aviation activity in the division areas. The division FCC provides ATC service for Army aircraft within the division area and serves as a point of access into the A^2C^2 system.

It provides a primary communications link between the terminal facilities of the division airfields, other airfields, the division TOC, and the flight operations center. The FCC provides a liaison with associated AD fire units that provide low altitude radar coverage over the division and beyond the FLOT. Through voice and data link, this information is forwarded via AD, Army aviation, and Air Force systems to aircraft operating in and forward of the division area.

REGIMENTAL AND SQUADRON AIRSPACE MANAGEMENT

5-70. At regimental and squadron levels, ATS elements cannot manage airspace using positive control methods. They will use procedural control methods. At these levels, airspace management and FS coordination functions are closely interwoven. These functions involve detailed coordination and integration of tactical fire and maneuver operations. Therefore, those individuals directly involved in the conduct of localized combat operations perform airspace management functions as part of the corps airspace control system. These individuals include squadron and troop commanders, FS coordinators, air liaison officers, and forward air controllers. Although commanders will communicate directly with Army aviators to accomplish tasking and coordinate tactics and techniques, ATS elements will make every effort possible to provide advisory information or other needed assistance. For example, ATS elements may establish passive landing sites or nonprecision passive navigation systems.

SECTION II—COMBAT SERVICE SUPPORT

FUNDAMENTALS

5-71. CSS is the support provided to sustain combat forces, primarily in the fields of administration and logistics. The effectiveness of the RAS and division cavalry is directly proportional to the effectiveness of its weapons systems and soldiers who operate them. In spite of operations in logistically bare areas, the nonlinear battlefield, and austere environmental conditions, logistics support of the air cavalry must be anticipated and pushed as far forward as possible. This chapter describes the CSS system for the RAS, division cavalry, and aviation troop with regard to planning, organization, and coordination.

COMBAT SERVICES SUPPORT OPERATIONS FOR THE REGIMENTAL AVIATION SQUADRON

5-72. RAS CSS operations are conducted primarily through the HHT, AVUM troop, and AHT. The RSS normally provides CSS (except AVIM) for the RAS. Because the regiment has an organic support squadron, it does not usually require augmentation. However, COSCOM may provide backup DS teams and may throughput Class III(A) to the regiment. The corps AVIM battalion provides the regiment with an AVIM company, backup AVUM, repair parts, and armament systems support. The units of the corps personnel group and finance group are the primary providers of personnel service support for the RAS. Units include the personnel services company, finance support unit,

replacement company, and postal company. The RSS of the ACR coordinates with these units for any support the RAS needs. The COSCOM is tailored for flexibility and provides support consistent with the mission. FMs 1-111, 63-3, and 100-10 describe COSCOM operations in detail.

COMBAT SERVICES SUPPORT OPERATIONS FOR THE DIVISION CAVALRY SQUADRON

5-73. Division cavalry CSS operations are conducted primarily through the HHT and AVUM troop. The armored DCS receives support from the DASB. In squadrons assigned to light infantry, air assault, and airborne divisions, CSS is provided primarily by FSSE from the DISCOM. The support relationship established with division influences the location of the SSA. In squadrons assigned to light infantry, air assault, and airborne divisions the field trains normally are collocated within the DSA or aviation BSA. In the heavy division, the squadron will normally fall under the OPCON of the division commander and be located in a position where it can be best supported by both ground and air CSS operations. This is frequently well forward in the vicinity of a maneuver brigade's BSA. The squadron receives AVIM support from the DASB or DISCOM. The DASB (armored division) or DISCOM (light infantry, air assault, and airborne divisions) provides AVIM support for the AVUM troop including allied shops support, backup AVUM, aircraft recovery support, and aviation Class IX repair parts.

COMBAT SERVICES SUPPORT OPERATIONS IN THE AIR CAVALRY TROOP

5-74. The air troop lacks the capability to transport or store Classes I, II, III, V, VI, and VIII; the troop must coordinate pick up of these items. The AVUM troop assists the ACT with receiving and coordinating CSS. The first sergeant is the ACT logistician. Additionally, the commander will usually assign a warrant officer as the ACT supply officer as an additional duty. With the commander's guidance, they will coordinate the troop's supply needs. Additionally, they will receive assistance from the Class III and/or Class V platoon sergeant and flight operations officer in forecasting Classes III(A) and V(A). Requests are then forwarded through normal supply channels. The air troops of the DCS and ACS, in conjunction with the AVUM troop, must work together to ensure CSS operations work.

SUPPLY CLASSES

CLASS I

5-75. The normal basic load of MREs for the RAS and DCS is a three-day supply. The RAS S4 consolidates ration requests from subordinate troops and sends them to the regimental S&T troop. The S&T troop then consolidates all squadron requests and sends them to the RMMC. The RAS S4 requests replenishment of the Class I basic load through the RMMC. In the RAS, regimental food service personnel draw rations from the regimental S&T troop Class I point in the RSA using supply point distribution. The consolidated food service section in the squadron HHT then prepares and distributes the food according to unit SOP.

5-76. Subsistence for DCSs in the light infantry, air assault, and airborne divisions is provided by the FSB. HSCs of the FSB or the HSC of the MSB provide Class I or ration breakdown points.

5-77. In the armored division cavalry, ration requests are sent from the squadron through the DASB to the DMMC or FSB with area support responsibility. The DASB supply platoon coordinates for delivery based on feeder reports and operates a Class I break point and distributes rations to the squadron.

WATER

5-78. For the RAS, water is located at the Class I distribution point. The S&T troop of the RSS is responsible for water potability and distribution, to include the establishment of water points. Squadrons draw water from the nearest water point, using supply point distribution. Water is delivered forward on the troop supply trucks as part of the LOGPAC.

5-79. For the division cavalry, water is supplied to the division by the MSB S&S company (armored divisions) or MSB HSC (light infantry, air assault, and airborne divisions). These water points are normally in the DSA and in each BSA. Resupply at the squadron level is similar to the RAS.

CLASSES II, III (PACKAGED), IV, AND VII

5-80. The RAS receives its Classes II, III (packaged), IV, and VII supplies from the S&T troop of the RSS. In the armored division cavalry, these supplies are provided by the DASB in the Aviation BSA, a DASB supply platoon, area supporting FSB or the DMMC. In the light infantry, air assault, and airborne divisions, these supplies are provided by the MSB HSC in the DSA or by the forward HSC in the BSA on an area basis.

5-81. Requirements for Classes II, III (packaged), IV, and VII supplies, flow from the RAS through the RMMC to the COSCOM MMCs. Normally, RAS elements are forward and send requirements to the field trains (S4).

CLASS III (BULK)

5-82. In the ACR, the S&T troop of the RSS receives, temporarily stores, issues, and distributes Class III (bulk) fuel supplies. The petroleum storage and issue section of the S&T troop in the RSA operates Class III distribution points. The S4 forecasts fuel requirements for the squadron during the planning process and transmits this request to the Class III section of the regimental MMC. COSCOM may throughput Class III(A) bulk directly to the RAS.

5-83. In the division cavalry, the air troop commanders in conjunction with the Class III and/or Class V platoon sergeant and flight operations officer forecast Classes III(A) and V(A) and submit to the S4. These forecasts and reporting times are established in the division SOP. Depending on the support relationship in effect, the forecast is submitted through the aviation brigade S4 or DASB supply platoon and/or FSB, to the MSB, or directly to the DMMC. In the light infantry, air assault, and airborne divisions, MSB

HSC in the DSA or by the forward HSC in the BSA on an area basis, receives, temporarily stores, and issues Class III (bulk).

5-84. Emergency aerial resupply of fuel is accomplished using collapsible 500-gallon drums. In the RAS, the AHT may be used to deliver fuel from the S&T troop Class III point to squadron trains, troop trains, or direct to the FARP. In the division cavalry, this type of utility helicopter support is requested through the aviation brigade headquarters from the GSAB (armored divisions), assault battalion (light infantry and airborne divisions), or command aviation battalion and/or medium helicopter battalion (air assault division).

CLASS V

5-85. In the ACR, the S4 initiates Class V and V(A) requests. The ACR or corps ammunition officer authenticates the requests. If an emergency shortage of ammunition occurs, the corps can use PLS or stake and platform trailers to deliver ammunition by throughput distribution directly to the squadrons combat trains. It may also arrange for aerial resupply. The Class III and/or Class V platoon and the AHT are the primary RAS assets that handle and transport Class V. Cross-leveling Class V(A) supplies within the ACR may be necessary to meet emergency requirements.

5-86. For the division cavalry, the DAO, located in the DMMC, performs ammunition management for the division and exercises staff supervision over all ATPs. Division or higher commanders determine the ammunition basic loads based on the situation and availability.

5-87. The majority of aviation ammunition is usually issued at an ASP. To meet the needs of the squadron, the S4 must coordinate through the DASB support operations and DAO to route ammunition from COSCOM directly to an ATP providing area support or to a temporary ATP in the FLE. The aviation brigade may have a supporting ATP for some operations that can be used by the squadron to reduce turnaround time. The S4 must ensure that he coordinates for the movement of any Class V(A) in area supporting ATPs. In the light infantry, air assault, and airborne divisions, the forward HSC ATP in the BSA, or DS ammunition company ATP on an area basis provide the ammunition requested.

CLASS VI

5-88. Class VI supplies consist of Army and Air Force Exchange Service items for sale to troops and other authorized individuals. This class of supply should not be confused with the ration supplement (sundries) pack. The sundries pack contains items necessary for the health and welfare of troops, such as essential toilet articles. It is made available in theaters of operation for issue through Class I channels. The S1 submits requests for support through administrative channels when an Army exchange facility is not available.

CLASS VII (MAJOR END ITEMS)

5-89. Class VII items are not stocked in squadrons. Major end items are issued on daily battle loss reports by formal requisition. The COSCOM may

deliver large items to the RAS or division cavalry. For aircraft, the nondivi-sional HESC may stock replacement aircraft. These aircraft are generally command regulated and released at the direction of the corps commander.

CLASS VIII

5-90. In support of the RAS, the medical troop of the RSS establishes a regimental medical supply section distribution point.

5-91. For the DCS, the DMSO, which is part of the MSB medical company, is responsible for providing medical supply and unit level medical maintenance support. Supplies are distributed to the supported medical units using the supply point distribution method. Request for Class VIII is forwarded to the DMSO and the Class VIII supplies are forwarded to the squadron at the forward medical company providing area support.

CLASS IX

5-92. The AVUM troop maintains the aviation PLL for the RAS. Requests for PLL replenishment are submitted to the AVIM SSA, which maintains the regimental ASL for Class IX(A). The SSA either issues the part or forwards a request to the COSCOM MMC.

5-93. In the division cavalry, a PLL is maintained in the squadron by each ground troop, HHT , and the AVUM troop and/or aviation service troop. These PLLs are continuously reconstituted from the ASL in the ASB.

MAPS

5-94. For the RAS, the RMMC maintains required stockage levels of unclassified maps. The S&T troop stores the maps. The RMMC directs the issue of maps, using established automated procedures for Classes II, III (packaged), and IV. Requirements are computed under the staff supervision of the G2 (S2 if ACR level), who establishes issue priorities. The RAS S2 submits classified map requirements through the regimental S2.

5-95. In DCSs, the DMMC maintains required stockage levels of unclassified maps. The squadron S2 submits classified map requirements through the aviation brigade S2.

FORWARD AREA ARMING AND REFUELING POINT

5-96. The FARP is the focal point of the ACTs forward support (see FM 1-111). The squadron normally places one FARP with the squadron's combat trains for C^2, support, and protection. The organic firepower of the AVUM troop's FARP is limited to small arms (M16, M203, SAW, AT-4 and .50 cal). A second FARP is placed forward as close to the AO as the situation permits. Keeping a FARP forward increases the total time on station by reducing the travel times associated with arming and refueling. The forward most FARP is normally placed outside the range of enemy medium artillery. This FARP may be placed in the vicinity of a forward AA, but is normally established as a separate site to reduce the signature and simplify aircraft flight patterns. If the FARP is placed outside the squadron's assigned AOs, the S4 must coordinate the location with the affected brigade. Every open field becomes a

potential FARP site. A good location allows for tactical dispersion of aircraft and conceals FARP operations. Tree lines, vegetation, shadows, built-up areas, terrain folds, and reverse slopes should be used to mask the operation from enemy detection. See Figure 5-9 for an example of a FARP setup. Once activated, forward deployed FARPs must be moved frequently to increase survivability particularly when within range of indirect fire systems.
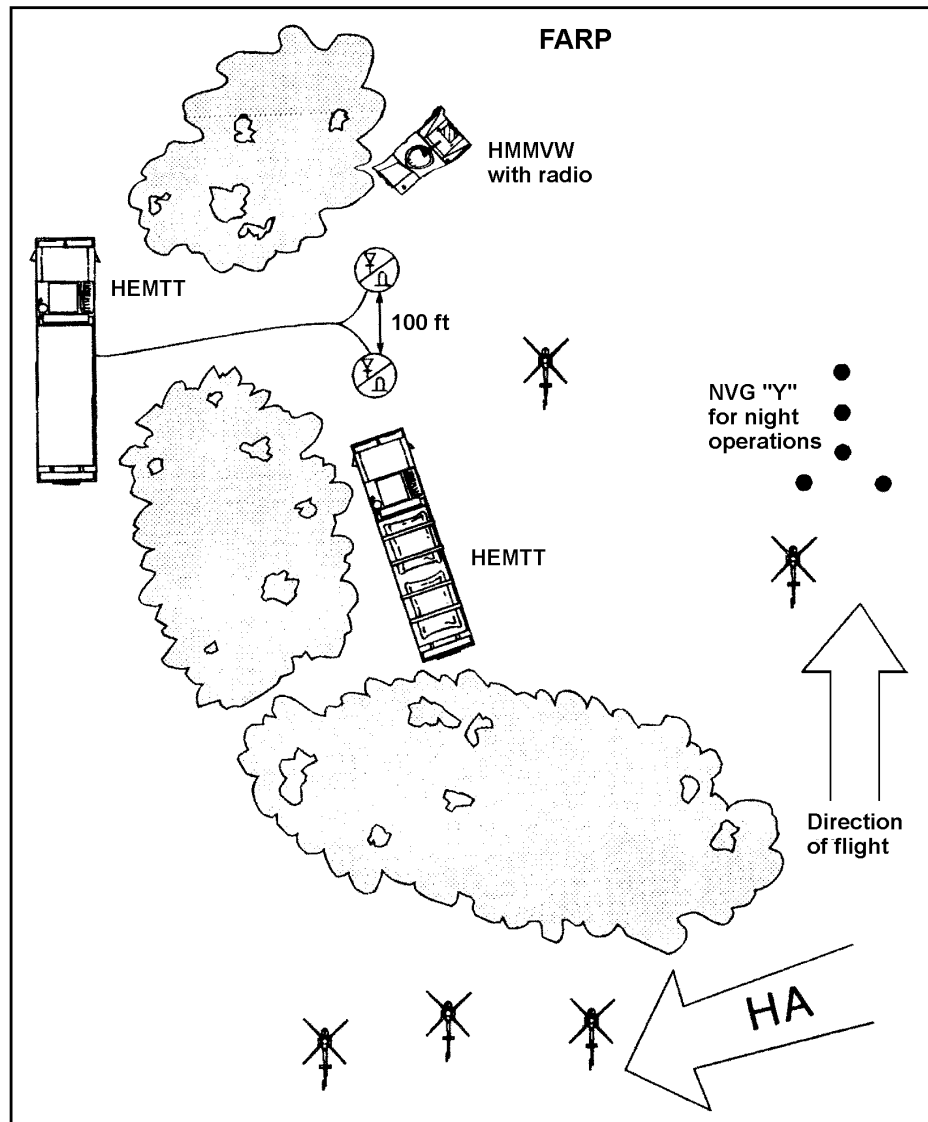
Figure 5-9. Example of a FARP Setup

5-97. The FARP is task organized to meet the aviation mission requirements and to provide support in the forward area. Figure 5-10 depicts a FARP collocated with the flight operations center in a FAA. It is composed of aviation Classes III and V assets and can include a maintenance contact

team. The AVUM troop and/or aviation service troop commander assembles this team, as required, from assets of the troop. Organizing this contact team is balanced against the requirements of maintenance in the rear where more extensive work can be accomplished. This contact team focuses on BDA and quick repairs. The ACT commanders can combine their crew chiefs to provide a contact team forward at the FARP as well as to support in the rear AA. Movement and resupply of the FARP is conducted by ground or aerial means. When time is critical, air delivery is the most advantageous.
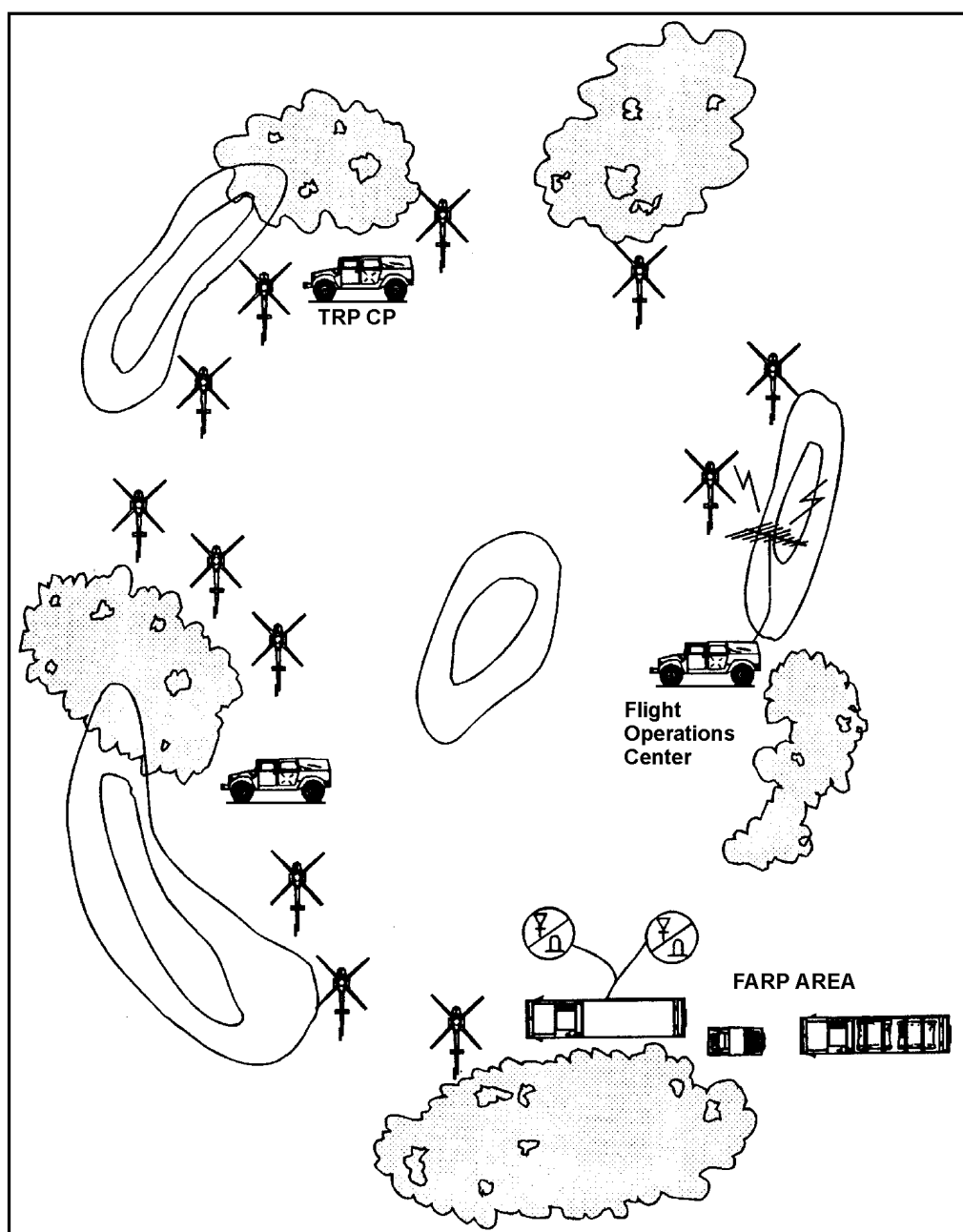
Figure 5-10. FARP collocated with flight operations center in FAA

VEHICLE AND OTHER GROUND EQUIPMENT MAINTENANCE AND RECOVERY

MAINTENANCE SUPPORT

5-98. The RAS and DCSs have an organic unit maintenance element. However, the large number of aircraft, ground vehicles, and other critical pieces of equipment necessitates additional maintenance assistance from outside the squadrons (such as DS, GS, and depot) to sustain operations.

UNIT MAINTENANCE

5-99. The operator and/or crew and organizational maintenance personnel perform unit maintenance. It includes scheduled and unscheduled unit level maintenance repair and PMCS. As a rule, the operator and/or crew of the using unit primarily performs PMCS. The purpose of PMCS is to improve the operational readiness of equipment by preventive maintenance and early diagnosis of problems.

DIRECT SUPPORT MAINTENANCE

5-100. They provide extensive maintenance support to the squadrons including component repair and repair parts supply (ASL) support. DS maintenance for the RAS is furnished by the maintenance troop of the RSS. DS maintenance for the DCS is furnished by the DASB in the DISCOM. The light infantry, air assault, and airborne division's DCS receive maintenance support from the MBA's maintenance companies in the DSA, or by the forward maintenance company in the BSA on an area basis.

GENERAL SUPPORT MAINTENANCE

5-101. GS maintenance is characterized by an extensive component repair capability. This level of maintenance is normally found at theater army level.

DEPOT MAINTENANCE

5-102. AMC depots or activities, contractors, and host nation support personnel perform depot maintenance in support of the supply system. Depot tasks are outlined in AR 750-1 and also in a memorandum of understanding when they are performed in the theater of operations.

RECOVERY PROCEDURES

5-103. The recovery manager coordinates recovery operations with the overall repair effort to best support the commander's priorities and the tactical situation. The HHT has vehicle recovery capability. FM 9-43-2 describes the technical aspects of vehicle recovery operations.

AVIATION MAINTENANCE SUPPORT STRUCTURE

5-104. The three levels of aviation maintenanceare AVUM, AVIM, and depot (see FM 1-500).

AVIATION UNIT MAINTENANCE

5-105. The AVUM and/or aviation service troops, along with crew chiefs in the ACTs of the RAS and DCSs, perform AVUM level maintenance. The general concept is for crew chiefs assigned to specific aircraft to perform daily servicing and inspections. Crew chiefs also perform common "remove and replace" aircraft repairs. Scheduled maintenance (other than daily inspections) and the more time consuming operator level repairs are normally done by the AVUM and/or aviation service troop organic to the squadron.

5-106. Most of the RAS AVUM troop is located in the RSA. The divisional cavalry AVUM and/or aviation service troop is located in the SSA forward with the field trains or RSA.

AVIATION INTERMEDIATE MAINTENANCE

5-107. The RAS is supported by a nondivisional AVIM company located at the corps level. The AVIM company provides intermediate shops, maintenance, Class IX ASL, ORF aircraft, and repairable exchange support for the RAS. The AVIM unit also provides backup AVUM and backup recovery support for the squadron.

5-108. The armored DCS is supported by the AVIM company in the DASB. This AVIM company provides the same support as the nondivisional AVIM, but normally does not maintain ORF aircraft. The light infantry, air assault, and airborne divisions are supported by a separate AVIM, under the DISCOM.

DEPOT

5-109. The military industrial base in CONUS fixed-base facilities generally provide depot level aviation maintenance support. The nondivisional AVIMs under a SRA normally perform some depot maintenance in theater.

AIRCRAFT RECOVERY OPERATIONS AND BATTLE DAMAGE ASSESSMENT AND REPAIR

5-110. The owning aviation unit is responsible for aircraft recovery and BDAR. The AVUM troop recovery team is normally located at the combat trains (FARPs) or with the troop in the field trains in a DCS. The AVUM troop assesses the recovery requirements and, if aerial recovery is necessary, contacts the supporting AVIM and aviation brigade for support. Aircraft recovery operations are those that move inoperative aircraft systems or components from the battlefield to a maintenance facility. In some cases, only portions of inoperative or damaged aircraft may be recovered. Supported AVIM companies have a backup recovery and BDAR capability.

More detailed information on aircraft recovery can be found in FMs 1-500 and 1-513.